



December 31, 1997

Kevin Daniels
Closure Projects and Integration
SSOC, RFETS
Building 130

**RESPONSE TO LESSONS LEARNED PROVIDED FOR THE MOUND SITE EXCAVATION
OF T3/T4 SOILS - JEL-137-97**

Thank you for providing your Lessons Learned which you developed from observing the Mound Site Re-Excavation. We will make sure that the project managers are briefed on your findings and share this information with other ER staff. We have attached responses for some of the issues that you raised.

If you have any questions about our responses, please call me at extension 4842 or Annette Primrose at extension 4385.

Thank you for your input into making RMRS jobs safer and better.

John E. Law
Director
Environmental Restoration

ALP/aw

Attachments:
As Stated

cc:

J. A. Anderson
M. C. Broussard
J. M. Langsted
A. L. Primrose
W. R. Sproles
RMRS Records

ADMIN RECORD

BZ -A-00010

Response to Lessons Learned for Mound Site Re-Excavation
Provided by Kevin Daniels

Following is the response to the Lessons Learned provided by Kevin Daniels for the Mound Site excavation of T3/T4 soils, with clarification of the issues raised, and/or the steps taken to mitigate problems. Responses are shown in italics. Jerry Anderson's response, which was provided earlier, has also been incorporated.

1. The radiological controls associated with the collection of ground water from the excavation were not well planned and discussed in advance of the operation. There were several problems that resulted:

a. The required controls and actions for a spill were not discussed as part of the pre-evolution briefing. The work area was being controlled as a Soil Contamination Area (SCA). All personnel and material exiting the area were required to be monitored for radioactive contamination. The tank the water was being pumped to was not marked as being potentially radioactively contaminated. When a spill occurred from the tank, it was not initially identified as a spill. Personnel noticing the spill did (not) appear to know that the water was potentially radioactive since they did not warn other personnel in the area and they entered the spill area without personnel protective equipment prior to radiological surveys being performed in the area.

b. The spill was the result of a cracked valve on the bottom of the tank. A timber was in the secondary containment area and was wetted from the spill. Neither the timber nor the cracked valve (once it was removed from the tank) were properly controlled as radioactive material until a release evaluation was completed for them.

c. The work instructions did not address being able to take water samples during the performance of this operation. Water samples of the water spilled from the tank would have been useful in determining if the water was to be considered as radioactive.

Response

a. This was a task associated with a project utilizing the same team members; spill response had been addressed in previous briefings but was not addressed that morning. Spill response requirements will be a part of the normal pre-evolution briefings for future ER projects (including T-1).

The oversight of not posting the tank and transfer hose was corrected by Rad Ops. As you noted below, the RCTs were very diligent in their control of contamination. It is felt that this deficiency was an outlier that does not require specific corrective actions other than those already accomplished, however, project staff will be reminded to make sure all potentially radioactive materials are posted to ensure that all project personnel are adequately informed of potential hazards. Site procedures on posting already address the requirements for marking and labeling internally contaminated equipment.

b. Project personnel will be reminded to properly control potentially radioactive materials, and to check for and remove extraneous materials from within secondary containments prior to use.

c. Appropriate radiological postings should have been in place prior to pumping groundwater into the tank. Sampling of the tank contents was not required for treatment of the water at the

Consolidated Water Treatment Facility based on the known levels of radiological contamination in soil and groundwater.

2. The initial RBA boundary was not set up with yellow and magenta rope, which is required for radiological barriers.

Response

Site procedures are unclear on the requirements for SCA control. Radiological Engineering has developed a Technical Basis Document for control of these areas. This document is currently being revised. When finalized, the requirements of the Technical Basis Document will be followed for control of SCAs.

3. The radiological controls for this type of operation may require further definition.

The RFETS Radiological Controls Manual states in article 332 that personnel who exit RBAs containing contamination areas, high contamination areas, or airborne radioactivity areas should be monitored as specified in article 338. Art 338 states that personnel should at a minimum perform a hand or foot frisk unless the RBA exit is immediately adjacent to where personnel were performing whole body frisks. Personnel who entered the RBA without entering the SCA were not routinely performing frisk upon exiting the RBA.

The work area was being controlled as a soil contamination area. ROI-07.03 indicates that hoses and/or cables that cross contamination boundaries are to be secured to prevent the spread of contamination. The RFETS Radiological Controls Manual states in art 337 to mark and secure items such as hoses and cords that cross a contamination boundary (CA, HCA, and ARA are specifically listed as these areas. SCA is not specifically listed.) The hoses and cords going into the area and the hose going into the tank were not marked or secured.

There were several other instances where 'normal' practices for step off pad areas were not used. For example, personnel entering the RBA were not required to wear dosimetry and anticontamination clothing removal and personnel monitoring procedures were not posted at the locations where these operations were to occur (full time RCT coverage was provided).

Response

Although not required by the Radiological Control Manual, the first two items were implemented as a best management practice. As discussed above, the Site procedures are undefined on the requirements for SCA control. The Technical Basis Document will specify how to control these areas, and will be followed when it is finalized.

4. Personnel at the work site were not sensitive to making sure that they did not touch their faces with their gloves while in the SCA. For work such as this where personnel may require adjustment to glasses, ear plugs, or may need to wipe sweat out of their eyes, survey could be performed on the gloves/material to allow this to occur. Initially, no instrument was staged in the SCA to allow this to occur. Additionally, supervisory personnel at the site did not routinely point out and correct these problems when they occurred.

Response

Personnel were briefed on proper actions to prevent cross contamination at the noon pre-evolution briefing. This will be emphasized during briefings for future project involving work in SCAs. The use of partial frisking or self monitoring will be considered.

5. No protocol was established between the RCTs and the equipment operator where the RCT would signal either the spotter or the operator when the RCT was clear of the bucket and it could be lifted. Instead, the RCT gave a thumbs up when the survey of the bucket material was completed and then turned and walked away. This type of protocol would minimize the chance that the RCT would turn around and step into the path of the bucket.

Response

As you noted, the RCTs were providing a signal to the operators. Establishing a signal prior to initiation of the evolution, then ensuring that eye contact is made with the operator prior to giving the signal will be stressed at the pre-evolution briefings for similar projects.

6. One of the prerequisites in the procedure included a requirement to complete a competent persons checklist for the excavation, if applicable. It was initially determined to not be applicable. A review of the checklist indicated that portions of it were applicable as part of a pre-excavation checklist (such as checking for above and below ground interference identification).

Response

The excavation checklist is appropriate only if personnel entered the excavation. However, as part of the excavation permit, the above and below ground utilities and interferences are noted prior to beginning intrusive work. This addresses the issue of above and below ground interference.

7. At one point the overall long term wind direction shifted such that the air monitoring equipment was no longer downwind of the excavation. Personnel assigned to the work did not note the wind shift. The equipment was repositioned after the wind change was pointed out.

Response

Project and field managers will be reminded that they are responsible for identifying and responding to changing conditions. In addition, all personnel will be reminded at pre-evolution briefings that they also have the responsibility to identify and respond to changing conditions.

8. At one point an equipment operator had one leg sticking out of the front of the cab while operating the equipment. This safety concern was not identified and corrected by other personnel in the area who were assigned to the work.

Response

At the next break, the operator was reminded by the ER Projects Manager that this behavior was not appropriate. We will continue to stress at our pre-evolution briefings that all individuals must work safely using equipment as it was intended and designed.

SUMMARY:

The overall job was very successful and was the result of the dedicated efforts of many individuals. Radiological surveys indicated that the contaminated soil was retrieved without any measurable spread of radioactivity to the surrounding environment. The RCTs were very diligent on the surveys to find and remove the contaminated soil. Many of the concerns listed above appeared to be the result of personnel being completely focused on the actual soil removal and not paying attention to other radiological controls and safety areas. Additionally, the expected radiological controls, other than area posting and PPE to be used, were not discussed at

the pre-evolution briefing. Personnel may have been rationalizing not correcting some items because of the low level of radioactivity present. It may be appropriate for some lesser level of controls to be used for future work dealing with this level of contamination. However, whatever controls are specified, should be followed by the personnel assigned to the work and departures from requirements should be corrected as they are noted.

Response

Thank you. We agree that the success of the project was a result of the dedication and safety attitude of the individuals on the team. We will continue to stress that safety comes first, prior to getting the job done. In addition, personnel will be reminded that they are expected to work safely and in accordance with all radiological controls. The radiological controls such as PPE and posting requirements for each job will continue to be discussed at pre-evolution briefings, and will include any additional radiological controls necessary to perform tasks safely. Project staff will be reminded to observe these controls, and correct departures from requirements as soon as noted.

As stated earlier, Radiological Engineering has developed a Technical Basis Document for control of SCAs. When finalized, this document will better define the controls necessary for lower levels of radiological contamination, and will be followed for control of SCAs. We appreciate your input into making RMRS jobs safer and better.